REMARKS

By telephone interview on October 8, 2003, Applicant's attorney Eric Weimers, Reg. No. 33,048, Applicant YunChing Huang, Applicant's representative James Gordon, Examiner Day, and Primary Examiner Jones discussed the August 13, 2003 final Official Action. This interview is summarized herein. The Examiner stated that objections to the drawings would be held in abeyance. With regard to the rejection of claims under 35 U.S.C. §112, the Examiner argued that the proper domain of composed function f•s1 should be the domain of function s1. With regard to the rejection of claims under 35 U.S.C. §102 under Silva and 35 U.S.C. §103 under Silva in view of Kalay, the Examiner refused to withdraw the finality of the rejection because the rejection was necessitated by Applicant's amendment.

Per the Examiner's interview, the Draftsperson's objections in paragraph 2 of the Official Action will be held in abeyance. In paragraph 3 of the Official Action, the Examiner has requested more detail regarding the ACIS Geometric Modeler system. While ACIS is merely the underlying modeling system employed by an embodiment of the present invention, Applicant is including an overview section from the user's manual for ACIS version 5.0 for the Examiner's benefit.

The abstract has been amended to overcome the Examiner's objections in paragraph 4 of the official action. While Applicant disputes the Examiner's objection in paragraph 6 of the Official Action that claims 9,10, 20 and 21 introduce new matter, Applicant has canceled claims 9, 10, 20 and 21 without prejudice herein.

Claims 1-25 have been rejected under 35 U.S.C. §112 paragraph 1 as containing subject matter which was not described in such a way as to enable one skilled in the art to make and/or use the invention. Per the Examiner's interview, the Examiner states that the domain of function $f \bullet s1$ at page 9, line 21 is contradictory to the definition of function $s1(u,v)$ at page 9, line 16, and that the domain of functions $f \bullet c1$ and $c1(t)$ are similarly contradictory. Applicant respectfully traverses Examiner's objection on the grounds that the specification is enabling to one skilled in the art without regard to the domain notation supplied in the referenced illustrative equations. However, Applicant acknowledges that the Examiner's suggested notation reflects more prevalent usage, and has amended the specification herein to conform to the Examiner's suggestion and to better conform the illustrative equations to the textual description in the specification. As shown on page 11, lines 14-25, the specification discloses that the composed surface functions sf1, sf2, sf3 . . . are "from $\Re^2$ to $\Re^3$", and that the composed curve functions cf1, cf2, cf3 . . . are "from $\Re^1$ to $\Re^3$". Applicant submits that the amendment to the equations objected to by the Examiner merely conform the illustrative equations to more standard usage and the textual description of the specification.

The Examiner has also objected that transformation function f is a 1x3 vector while composed functions sf1 and cf1 are shown as 3x1 vectors. Applicant respectfully traverses this objection and submits that the textual description of transformation function f and composed functions sf1 and cf1 are intended to describe standard x,y,z coordinate systems in 3-dimensional computer graphics models and are not intended to represent matrix operations.

The Examiner has rejected claims 1, 2, 7-15, and 20-25 under 35 U.S.C. 102 as anticipated by Silva. Applicant respectfully traverses this rejection. Claim 1 recites, in part, the steps of defining a transformation function and creating new surface and curve functions by performing function composition with each of the existing surface and curve functions with the transformation function. Silva does not teach or suggest such steps. Silva describes a polyhedral modeling system where the geometry consists of control points representing vertices connected by edges. Silva merely describes a transformation technique well-known in the prior art of polyhedral modeling where a transformation is applied directly to control points of the vertices, as described in Applicant's Background of the Invention section. In contrast, the present invention uses a boundary representation modeling system (or another similar modeling system) where the geometry uses functions representing curves and surfaces. Boundary representation modeling allows for more accurate representations than polyhedral modeling but requires additional computational resources to manipulate. Prior to the present invention, the modeling industry has lacked the ability to accurately and efficiently transform the underlying curves and surfaces of boundary representation models. Because Silva only discloses transforming points directly, Silva does not disclose or even suggest performing function composition with curve or surface functions. In fact, a section pointed to by the Examiner specifically states that "[t]he transform 230 is responsible for transforming points in the object space coordinate system to corresponding points in the world space coordinate system." (Col. 11, lns. 23-26). Applicant has amended claims 2 (from which claims 3-14 depend) and 15

(from which claims 16-25 depend) to more clearly point out the novel function composition of the present invention.

The Examiner has rejected claims 3-6 and 6-19 as obvious under 35 U.S.C. §103 in view of Silva over Kalay. While Kalay generally describes modeling systems such as polyhedral modeling systems and boundary representation modeling systems, Kalay does not disclose any transformation of such models. As stated above, Silva discloses a control point transformation rather than a function composition transformation. Therefore, combining Silva with Kalay teaches away from the present invention of using function composition to perform a transformation on a model using curve and surface functions.

Applicant respectfully requests that a timely notice of allowance be issued in this case.

Respectfully submitted,

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